# GOVERNMENT OF INDIA
# SCIENCE AND TECHNOLOGY
# LOK SABHA

UNSTARRED QUESTION NO:4426
ANSWERED ON:19.05.2006
THORIUM BASED POWER
Rao Shri Kavuru Samba Siva

**Will the Minister of SCIENCE AND TECHNOLOGY be pleased to state:**

(a) whether scientific research is directed to find out solutions to benefit other sectors like agriculture, power generation, industry and health care;

(b) if so, the details thereof;

(c) whether R&D has achieved success in generating Thorium based power generation;

(d) if so, the extent of power generation capacity;

(e) whether the country has developed technology for production of hybrid automobiles and hydrogen driven vehicles; and

(f) if so, the details thereof?

## Answer

MINISTER OF SCIENCE AND TECHNOLOGY AND MINISTER OF OCEAN DEVELOPMENT (KAPIL SIBAL)

(a) & (b): Scientific research has focused on generating relevant innovative technologies; preserving, protecting and adding value to indigenous resources; adopting an appropriate mix of traditional, conventional and modern technologies; developing and nurturing human resource; strengthening basic research in the areas of frontline science & engineering. Significant achievements have been made in the power sector especially for large scale deployment of nuclear power in the country. Large network projects in the public-private partnership mode with industries and strategic partnership with Indian companies for carrying out innovative research and development have been established to benefit sectors like agriculture, power generation, industry and health care etc. Design and development of a 14-seater light transport aircraft-SARAS, environment-friendly leather processing technologies, disease resistant rice variety, biodiesel from jatropha, ceramic membrane based technology for removal of arsenic and iron from contaminated ground water, new therapeutic molecule for tuberculosis etc. are some notable results.

(c) & (d) Yes, Sir. A small number of thorium fuel bundles have been used in Pressurized Heavy Water Reactors to gain experience on the use of thorium. A research reactor using Uranium-233 derived from Thorium is working at Indira Gandhi Centre for Atomic Research in Kalpakkam, Tamil Nadu. A 300 MW Advanced Heavy Water Reactor, which would derive two-third of its energy from thorium has been designed. Its construction will be launched after getting regulatory clearances.

(e) & (f) Development of technologies for production of hybrid automobiles and hydrogen driven vehicles are being pursued vigorously by the leading global automobile companies including Indian companies. Prototypes of hybrid vehicles have been demonstrated. Ministry of Communication & Information Technology and National Hydrogen Energy Board set up under Ministry of Non-Conventional Energy Sources have been involved in development of this field. Engine Control Unit for Electronic Fuel Injection system for Indian base line Petrol Car partly with Ministry of Industry at ERDC, Pune Automotive Research Association of India (ARAI), Pune, Development of Vector Controlled Induction Motor Drive for Hybrid Electric Bus with co-funding from Department of Scientific and Industrial Research (DSIR) at Centre for Development of Advanced Computing, Thiruvananthapuram (CDAC-T) and M/s. Ashok Leyland Ltd., Chennai etc. are some projects in this direction. National Mission on Power Electronics Technology launched by CDAC-T, under Department of Information Technology (DIT) focuses on Electric traction/Electric & Hybrid Electric Vehicles / Automotive Electronics. There is also a new inter-ministerial programme under the Core-group on Automotive R&D which has generated a technology road map. It focuses on enabling an R&D programs conducted cooperatively among industry, academia and government so as to promote technologies that will enhance energy security, environmental quality, economic growth and establish a globally competitive transportation industry.